predetermined comprising the steps of:

What is claimed is:

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method for providing adata symbol having a first quadrature compensated data symbol (FQCDS), second quadrature compensated data symbol (SQCDS), a first in-phase compensated data symbol (FICDS) and a second in-phase compensated data symbol (SICDS) to an inverse fast fourijer transform (IFFT) of a multicarrier quadrature modulator having an amplifier, wherein a first subcarrier data symbol and a second subcarrier data symbol are available from a mapper and an alpha, epsilon and gain are

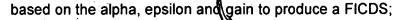
first quadrature compensating the data symbol based on the alpha, epsilon and gain to produce a FQCDS;

second quadrature compensating the data symbol based on the alpha, epsilon and gain to produce a SQCDS;

first in-phase compensating the data symbol based on the alpha, epsilon and gain to produce a FICDS; and

second in-phase compensating the data symbol based on the alpha, epsilon and gain to produce a SICDS.

- 2. A method for providing a first quadrature compensated data symbol (FQCDS), second quadrature compensated data symbol (SQCD\$), a first in-phase compensated data symbol (FICDS) and a second in-phase compensated data symbol (SICDS)to an inverse fast fourrier transform (IFFT) of a multicarrier quadrature modulator having an amplifier, wherein at least four transmitted symbol are available from the amplifier and at  $\cdot$ least four data symbols and a next data symbol are available from a mapper comprising the steps of:
  - a) calculating the energy of at least four transmitted symbols;
- b) calculating a alpha, epsilon and gain based on the energy of the at least four transmitted symbols and at least four data symbols;
  - c) storing the alpha, epsilon and gain;
- d) first quadrature compensating the next data symbol first quadrature subcarrier based on the alpha, epsilon and gain to produce a FQCDS;
- e) second quadrature compensating the next data symbol second quadrature subcarrier based on the alpha, epsilon and gain to produce a SQCDS;
  - f) first in-phase compensating the next data symbol first in-phase subcarrier



- g) second in-phase compensating the next data symbol second in-phase subcarrier based on the alpha, epailon and gain to produce a SICDS; and
- h) repeating steps a, b and dwherein the at least four transmitted symbols include the next transmitted data symbol and the at least four data symbols include the next data symbol.
- 3. The method of claim 2 wherein the step of calculating a alpha, epsilon and gain further comprises the step of:

calculating a first alpha, first epsilon and a first gain based on the energy of the at least for transmitted symbols;

calculating a second alpha, second epsilon and a second gain based on the energy of the next data symbol;

calculating a alpha based on a average of the first alpha and the second alpha; calculating a epsilon based on a average of the first epsilon and the second epsilon; and

calculating a gain based on a average of the first gain and the second gain.

- 4. The method of claim 2 wherein the step of calculating the energy of at least four transmitted symbols further comprises the steps of:
  - a) sampling output of a transmitter to provide a sampled signal;
  - b) squaring the sampled signal to provide a squared sample signal; and
  - c) integrating the squared sample signal over a symbol duration.
- 5. An apparatus for providing a first quadrature compensated data symbol (FQCDS), second quadrature compensated data symbol (SQCDS), a first in-phase compensated data symbol (FICDS) and a second in-phase compensated data symbol (SICDS) to an inverse fast fourrier transform (IFFT) of a multicarrier quadrature modulator having an amplifier, wherein at least four transmitted symbol are available from the amplifier and at least four data symbols and a next data symbol are available from a mapper comprising:
  - a) means for calculating the energy of at least four transmitted symbols;
- b) means for calculating a alpha, epsilon and gain based on the energy of the at least four transmitted symbols and at least four data symbols;
  - c) means for storing the alpha, epsilon and gain;

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- d) means for first quadrature compensating the next data symbol first quadrature subcarrier based on the alpha, epsilon and gain to produce a FQCDS;
- e) means for second quadrature compensating the next data symbol second quadrature subcarrier based on the alpha, epsilon and gain to produce a SQCDS;
- f) means for first in-phase compensating the next data symbol first in-phase subcarrier based on the alpha, epsilon and gain to produce a FICDS;
- g) means for second in-phase compensating the next data symbol second inphase subcarrier based on the alpha, epsilon and gain to produce a SICDS; and
- h) means for repeating steps a, b and c wherein the at least four transmitted. symbols include the next transmitted data symbol and the at least four data symbols include the next data symbol.
- 6. The apparatus of claim 5 wherein the means for calculating a alpha, epsilon and gain further comprises:

means for calculating a first alpha, first epsilon and a first gain based on the energy of the at least for transmitted symbols;

means for calculating a second alpha, second epsilon and a second gain based on the energy of the next data symbol;

means for calculating a alpha based on a average of the first alpha and the second alpha;

means for calculating a epsilon based on a average of the first epsilon and the second epsilon; and

means for calculating a gain based on a average of the first gain and the second gain.

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- 7. The apparatus of claim 5 wherein the means for calculating the energy of at least four transmitted symbols further comprises:
  - a) means for sampling output of a transmitter to provide a sampled signal;
- b) means for squaring the sampled signal to provide a squared sample signal; and
  - c) means for integrating the squared sample signal over a symbol duration.